WHAT IS CLAIMED IS:

1. A lead zirconate titanate-based thin film, wherein the film is an epitaxial crystal thin film which has a chemical composition represented by the general formula $Pb_{1-x}Ln_xZr_yTi_{1-y}O_3$ (wherein Ln represents any one selected from the group consisting of lanthanum, lanthanoid elements, niobium, calcium, barium, strontium, iron, manganese and tin; and $0 \leq x < 1$, $0.43 \leq y \leq 0.65$) and whose orientation is {111} (including orientations whose tilt angle from the direction perpendicular to the substrate surface is within 15°).

2. The lead zirconate titanate-based thin film according to claim 1, wherein the orientation of the film is (111) (including orientations whose tilt angle from the direction perpendicular to the substrate surface is within 15°).

3. The lead zirconate titanate-based thin film according to claim 1, wherein the half-width of the locking curve in the circumferential direction of X-ray pole figure is within 30°.

4. The lead zirconate titanate-based thin film according to claim 1, wherein the half-width of the locking curve in the circumferential direction of X-

ray pole figure is within 15°.

5. The lead zirconate titanate-based thin film according to claim 1, wherein the half-width of the locking curve of the crystal is within 15°.

6. The lead zirconate titanate-based thin film according to claim 1, wherein the half-width of the locking curve of the crystal is within 5°.

7. The lead zirconate titanate-based thin film according to claim 1, wherein the half-width of the locking curve of the crystal is within 2°.

8. The lead zirconate titanate-based thin film according to claim 1, wherein the half-width of the locking curve of the crystal is within 1°.

9. A lead zirconate titanate-based thin film having a composition represented by the general formula $Pb_{1-x}Ln_xZr_yTi_{1-y}O_3$ (wherein Ln represents any one selected from the group consisting of lanthanum, lanthanoid elements, niobium, calcium, barium, strontium, iron, manganese and tin; $0 \leq x < 1$; and $0.43 \leq y \leq 0.57$), wherein the relative permittivity - voltage characteristics of the film satisfy the following equation: $\Delta\varepsilon/\Delta E \geq 3.0$, wherein $\Delta\varepsilon$ is a change

in relative permittivity and ΔE is a change in electric field strength (kv/cm).

10. The lead zirconate titanate-based thin film according to claim 9, wherein the relative permittivity - voltage characteristics satisfy the following equation: $\Delta\varepsilon/\Delta E \geq 5.0$.

11. The lead zirconate titanate-based thin film according to claim 9, wherein the film is an epitaxial film whose orientation is (111) or within 15° from (111).

12. The lead zirconate titanate-based thin film according to claim 1 or 11, wherein the {111} face of the epitaxial film is orientated within a tilt angle of 5° (including 0°).

13. The lead zirconate titanate-based thin film according to claim 1 or 12, wherein the {111} face of the epitaxial film is orientated within a tilt angle of 3° (including 0°).

14. The lead zirconate titanate-based thin film according to claim 1 or 9, wherein silicon is used for the substrate.

15. The lead zirconate titanate-based thin film according to claim 14, wherein the silicon is (100) orientated.

16. The lead zirconate titanate-based thin film according to claim 14, wherein the silicon is (111) orientated.

17. The lead zirconate titanate-based thin film according to claim 1 or 9, wherein the film is formed by MOCVD;

18. The lead zirconate titanate-based thin film according to claim 1, wherein in the general formula $Pb_{1-x}\ Ln_x\ Zr_yTi_{1-y}O_3$, $0.43 \leq y \leq 0.57$.

19. The lead zirconate titanate-based thin film according to claim 18, wherein in the general formula $Pb_{1-x}\ Ln_x\ Zr_yTi_{1-y}O_3$, $0.45 \leq y \leq 0.55$.

20. The lead zirconate titanate-based thin film according to claim 1 or 9, wherein the crystal structure is at least any one of tetragonal, cubic and rhombohedral crystals.

21. The lead zirconate titanate-based thin film according to claim 20, wherein at least any two of

tetragonal, cubic and rhombohedral crystals coexist.

22. The lead zirconate titanate-based thin film according to claim 1 or 9, wherein at least the surface of the substrate is electrically conductive.

23. A lead zirconate titanate-based thin film, wherein the film is an epitaxial crystal thin film which has a chemical composition represented by the general formula $Pb_{1-x}Ln_xZr_{1-y}Ti_yO_3$ (wherein Ln represents any one selected from the group consisting of lanthanum, lanthanoid elements, niobium, calcium, barium, strontium, iron, manganese and tin; and $0 \leq x < 1$, $0.40 \leq y \leq 0.65$), whose orientation is {111} (including orientations whose tilt angle from the direction perpendicular to the substrate surface is within 15°), and in which at least any two of tetragonal, cubic and rhombohedral crystals coexist.

24. The lead zirconate titanate-based thin film according to claim 23, wherein in the general formula $Pb_{1-x}Ln_xZr_{1-y}Ti_yO_3$, $0.43 \leq y \leq 0.57$.

25. A lead zirconate titanate-based epitaxial thin film formed by MOCVD, wherein the film has a chemical composition represented by the general formula $Pb_{1-x}Ln_xZr_{1-y}Ti_yO_3$ (wherein Ln represents any

one selected from the group consisting of lanthanum, lanthanoid elements, niobium, calcium, barium, strontium, iron, manganese and tin; and $0 \leq x < 1$, $0.43 \leq y \leq 0.65$) and its orientation is {111} (including orientations whose tilt angle from the direction perpendicular to the substrate surface is within 15°).

26. A dielectric device, comprising the lead zirconate titanate-based thin film according to any one of claims 1, 9, 23 and 25.

27. A piezoelectric device, comprising the lead zirconate titanate-based thin film according to any one of claims 1, 9, 23 and 25.

28. An ink jet printer head, comprising the piezoelectric device according to claim 27.

29. A ferroelectric device, comprising the lead zirconate titanate-based thin film according to any one of claims 1, 9, 23 and 25.

30. A pyroelectric device, comprising the lead zirconate titanate-based thin film according to any one of claims 1, 9, 23 and 25.

31. A method of producing a lead zirconate

titanate-based thin film, wherein a crystal film having a chemical composition represented by the general formula $Pb_{1-x}Ln_xZr_{1-y}Ti_yO_3$ (wherein Ln represents any one selected from the group consisting of lanthanum, lanthanoid elements, niobium, calcium, barium, strontium, iron, manganese and tin; and $0 \leq x < 1$, $0.43 \leq y \leq 0.65$) is epitaxially grown on a substrate at least the surface of which has a {111} orientation or orientation with a tilt angle within 15° from {111} by MOCVD.

32. The method of producing a lead zirconate titanate-based thin film according to claim 31, wherein $0.45 \leq y \leq 0.57$.

33. The method of producing a lead zirconate titanate-based thin film according to claim 31, wherein $0.43 \leq y \leq 0.55$.

34. A lead zirconate titanate-based thin film, wherein the film is a crystal thin film which has a chemical composition represented by the general formula $Pb_{1-x}Ln_xZr_{1-y}Ti_yO_3$ (wherein Ln represents any one selected from the group consisting of lanthanum, lanthanoid elements, niobium, calcium, barium, strontium, iron, manganese and tin; and $0 \leq x < 1$, $0.40 \leq y \leq 0.65$), whose orientation is {111} (including

orientations whose tilt angle from the direction perpendicular to the substrate surface is within 15°), and in which at least any two of tetragonal, cubic and rhombohedral crystals coexist.